IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) A method of modeling of the visible world using full-surround image data, said method comprising:

selecting a view point within a p-surface wherein the p-surface comprises polygons approximating a partial sphere;

selecting a direction of view within the p-surface;

texture mapping full-surround image data onto said p-surface such that the resultant texture map is substantially equivalent to projecting full-surround image data onto the p-surface from said view point to thereby generate a texture mapped p-surface; and

displaying a predetermined portion of said texture mapped p-surface.

2-16 (Cancelled)

17 (Canceled)

18. (Previously Presented) The method of claim 1, wherein the p-surface comprises one or more polygons such that there exists a half-space for each polygon, and wherein the intersection of all such half-spaces includes at least one point in common.

19. (Previously Presented) The method of claim 18, wherein a point is within the p-surface if it is included in the intersection.

20. (Previously Presented) The method of claim 1, wherein the p-surface comprises one or more polygons, and wherein a point is within the p-surface if it is included in the union of a given set of half-planes, wherein the set includes no more than one half-plane per polygon.

21. (Previously Presented) The method of claim 1, wherein the p-surface comprises one or more polygons, and wherein a point is within the p-surface if it is included in the intersection of a given set of half-planes, wherein the set includes no more than one half-plane per polygon.

22. (Previously Presented) The method of claim 1, wherein the full-surround image data is a sample of incoming image data.

23-42 (Cancelled)

43. (Currently Amended) A method of modeling a hemispheric view, said method comprising:

capturing a first texture p-surface data set approximating a first hemisphere portion derived from a distorted view captured from a first wide-angle lens, said first texture p-surface data set comprising at least a portion of full-surround data wherein the full-surround data includes a partial hemisphere;

selecting a view point within the p-surface;

selecting a direction of view within the p-surface;

texture mapping the full-surround ~~image~~ data to a triangulation approximating the first hemisphere onto the p-surface substantially equivalent to projecting the full-surround ~~image~~ data onto the p-surface from said view point;

generating a texture mapped p-surface corresponding to the selected view; and

displaying the selected view of the texture mapped p-surface.

44. (Previously Presented) The method of Claim 43, wherein the full-surround data includes a full hemisphere.

45 (Canceled)

46. (Previously Presented) The method of Claim 43, further comprising steps of:

capturing a second texture p-surface data set approximating a second hemisphere portion derived from a second wide-angle lens, said second texture p-surface data set comprising a portion of full-surround data; and

combining the first p-surface texture data set and the second p-surface texture data set to generate the full-surround data.

47. (Previously Presented) The method of Claim 46, wherein the full-surround data includes a full sphere.

48. (Previously Presented) The method of Claim 46, wherein the full-surround data includes a partial sphere.

49. (Previously Presented) The method of Claim 43, further comprising steps of:

capturing a second texture p-surface data set approximating a second hemisphere portion derived from the first wide-angle lens after movement to a second view, said second p-surface texture data set comprising a portion of full-surround data; and

combining the first texture p-surface data set and the second texture p-surface data set to generate the full-surround data.

50. (Currently Amended) A method of modeling an image from a wide-angle lens, said method comprising:

texture mapping image data from the wide-angle lens onto a triangulation of at least a portion of a first hemisphere of full-surround data ~~wherein the full-surround data includes a partial hemisphere~~ onto a p-surface wherein the full-surround data includes a partial hemisphere;

selecting a viewpoint within the p-surface;

selecting a direction of view within the p-surface;

selecting a perspective of view;

generating a texture mapped p-surface corresponding to the selected view from the selected perspective using the full-surround data; and

displaying the generated view of the texture mapped p-surface.

51. (Previously Presented) The method of Claim 50, wherein the full-surround data includes a full hemisphere.

52. (Canceled)

53. (Previously Presented) The method of Claim 50, further comprising the steps of:

texture mapping image data from the wide-angle lens onto a triangulation approximating at least a portion of a second hemisphere of full-surround data onto a p-surface;

combining the full-surround data onto a combined p-surface of the portions of the first hemisphere and the second hemisphere to provide a full-surround data set of at least a portion of a sphere including more than a hemisphere.

54. (Previously Presented) The method of Claim 51, wherein the full-surround data includes a full sphere.

55. (Previously Presented) The method of Claim 51, wherein the full-surround data includes a partial sphere.

56. (Previously Presented) The method of Claim 50, further comprising the steps of:

texture mapping image data from a second wide-angle lens onto a triangulation approximating at least a portion of a second hemisphere of full-surround data onto a p-surface;

combining the full-surround data onto a combined p-surface of the first hemisphere and the second hemisphere to provide a full-surround data set of at least a portion of a sphere including more than a hemisphere.

57. (Previously Presented) The method of Claim 50, further comprising the steps of:

texture mapping image data from a nth wide-angle lens onto a triangulation approximating at least portion of a nth hemisphere of full-surround data onto a p-surface, wherein n designates one of a y number of wide-angle lens which collectively capture overlapping parts of at least a portion of the y hemispheres of image data;

combining the full-surround data onto a combined p-surface of the first hemisphere and the nth hemisphere to provide a full-surround data set of at least a portion of a sphere including more than a hemisphere.

58. (Previously Presented) The method of Claim 51, wherein the full-surround data includes a full sphere.

59. (Previously Presented) The method of Claim 51, wherein the full-surround data includes a partial sphere.

60. (New) A method of modeling of the visible world using full-surround image data, said method comprising:

texture mapping full-surround image data onto a p-surface such that the resultant texture map is substantially equivalent to projecting the full-surround image data onto the p-surface from a point of projection to thereby generate a texture mapped p-surface;

selecting a direction of view from a view point; and

displaying a portion of said texture mapped p-surface based on the selecting;

wherein the p-surface comprises polygons approximating a partial sphere.

61. (New) The method of claim 60, wherein the p-surface comprises one or more polygons such that there exists a half-space for each polygon, and wherein the intersection of all such half-spaces includes at least one point in common.

62. (New) The method of claim 61, wherein a point is within the p-surface if it is included in the intersection.

63. (New) The method of claim 60, wherein the p-surface comprises one or more polygons, and wherein a point is within the p-surface if it is included in the union of a given set of half-planes, wherein the set includes no more than one half-plane per polygon.

64. (New) The method of claim 60, wherein the p-surface comprises one or more polygons, and wherein a point is within the p-surface if it is included in the intersection of a given set of half-planes, wherein the set includes no more than one half-plane per polygon.

65. (New) The method of claim 60, wherein the full-surround image data is a sample of incoming image data.

66. (New) A method of modeling a hemispheric view, said method comprising:

capturing a first texture p-surface data set approximating a first hemisphere portion derived from a distorted view captured from a first wide-angle lens, said first texture p-surface data set comprising at least a first portion of full-surround image data;

texture mapping the full-surround image data to a triangulation approximating the first hemisphere portion onto a p-surface in a manner substantially equivalent to projecting the full-surround image data onto the p-surface from a point of projection;

selecting a direction of view from a view point; and

displaying a portion of the texture mapped p-surface based on the selecting

wherein the full-surround image data includes at least a partial hemisphere.

67. (New) The method of Claim 66, wherein the full-surround image data includes a full hemisphere.

68. (New) The method of Claim 66, further comprising steps of:

capturing a second texture p-surface data set approximating a second hemisphere portion derived from a second wide-angle lens, said second texture p-surface data set comprising at least a second portion of the full-surround image data; and

combining the first p-surface texture data set and the second p-surface texture data sets to generate the full-surround image data.

69. (New) The method of Claim 68, wherein the full-surround image data includes a full sphere.

70. (New) The method of Claim 68, wherein the full-surround image data includes a partial sphere.

71. (New) The method of Claim 66, further comprising steps of:

capturing a second texture p-surface data set approximating a second hemisphere portion derived from the first wide-angle lens after movement from a first view to a second view, said second p-surface texture data set comprising at least a second portion of the full-surround image data; and

combining the first texture p-surface data set and the second texture p-surface data set to generate the full-surround image data.

72. (New) A method of modeling an image from a wide-angle lens, said method comprising:

texture mapping image data from the wide-angle lens onto a triangulation of at least a portion of a first hemisphere of full-surround image data onto a p-surface;

selecting a direction of view from a viewpoint within the p-surface;

selecting a perspective of view;

generating a texture mapped p-surface corresponding to the selected direction of view from the selected perspective using the full-surround image data; and

displaying a portion of the texture mapped p-surface based on the selecting a direction of view and the selecting a perspective of view;

wherein the full-surround image data includes at least a partial hemisphere.

73. (New) The method of Claim 72, wherein the full-surround image data includes a full hemisphere.

74. (New) The method of Claim 72, further comprising the steps of:

texture mapping image data from the wide-angle lens onto a triangulation approximating at least a portion of a second hemisphere of full-surround image data onto a p-surface to generate a combined p-surface comprised of the texture mapped image data approximating the at least portions of the first hemisphere and the second hemisphere, wherein the full-surround image data is comprised of at least a portion of a sphere including more than a hemisphere.

75. (New) The method of Claim 73, wherein the full-surround image data set includes a full sphere.

76. (New) The method of Claim 73, wherein the full-surround image data set includes a partial sphere.

77. (New) The method of Claim 72, further comprising the steps of:

texture mapping image data from a second wide-angle lens onto a triangulation approximating at least a portion of a second hemisphere of full-surround image data onto a p-surface to generate a combined p-surface comprised of the texture mapped image data approximating the at least a portion of the first hemisphere and the second hemisphere, wherein the full-surround image data of at least a portion of a sphere including more than a hemisphere.

78. (New) The method of Claim 72, further comprising the steps of:

texture mapping image data from an nth wide-angle lens onto a triangulation approximating at least portion of an nth hemisphere of the full-surround image data onto a p-surface, wherein n designates one of a plurality y number of wide-angle lenses which collectively capture overlapping parts of at least a portion of the y hemispheres of the full-surround image data, wherein $y > 2$;

combining the full-surround image data onto a combined p-surface of the first hemisphere and the nth hemisphere to provide a full-surround image data set is comprised of at least a portion of a sphere including more than a hemisphere.

79. (New) The method of Claim 73, wherein the full-surround image data includes a full sphere.

80. (New) The method of Claim 73, wherein the full-surround image data includes a partial sphere.

81. (New) A method, comprising:

texture mapping full-surround image data onto a p-surface to generate a texture map that is substantially equivalent to projecting the image data onto the p-surface from a point of projection to thereby generate a texture mapped p-surface;

selecting a direction of view from a view point; and

displaying a portion of the texture mapped p-surface based on the selecting;

wherein the p-surface comprises polygons approximating at least a portion of a sphere.

82. (New) The method of Claim 81, wherein the full-surround image data is derived from source image data generated from visible stimuli.

83. (New) The method of Claim 81, wherein the point of projection comprises the view point.

84. (New) The method of Claim 81, wherein the point of projection is different from the view point.

85. (New) The method of Claim 81, wherein the view point is within the p-surface.

86. (New) The method of Claim 81, wherein the selecting a direction of view is performed by a user.

87. (New) The method of Claim 82, further comprising capturing the source image data using a single camera equipped with a fish-eye lens.

88. (New) The method of Claim 82, further comprising capturing the source image data using n cameras, wherein n > 2.

89. (New) The method of Claim 82, wherein the source image data is captured using n cameras, wherein n > 2.

90. (New) The method of Claim 82, wherein the source image data is captured using a single camera equipped with a fish-eye lens.

91. (New) The method of Claim 89, wherein n is at least 6.

92. (New) The method of Claim 81, wherein the full-surround image data is derived by sampling points defining the visible world.

93. (New) The method of Claim 81, further comprising generating the full-surround image data by sampling points defining the visible world.

94. (New) The method of Claim 90, wherein the full-surround image data is derived by sampling points of the source image data defining the visible world.

95. (New) The method of Claim 89, wherein the full-surround image data is derived by sampling points of the source image data defining the visible world.

96. (New) The method of Claim 88, further comprising generating the full-surround image data by sampling points of the source image data defining the visible world.

97. (New) The method of Claim 87, further comprising generating the full-surround image data by sampling points of the source image data defining the visible world.

98. (New) The method of Claim 81, wherein the p-surface comprises polygons approximating a cube.

99. (New) The method of Claim 81, wherein the p-surface comprises polygons approximating a tetrahedron.

100. (New) The method of Claim 81, wherein the p-surface comprises polygons approximating an ellipsoid.

101. (New) The method of Claim 81, wherein the p-surface comprises polygons approximating a dodecahedron.

102. (New) The method of Claim 81, wherein the p-surface comprises polygons approximating a cylinder.

103. (New) The method of Claim 82, wherein the p-surface comprises polygons approximating a cube.

104. (New) The method of Claim 82, wherein the p-surface comprises polygons approximating a tetrahedron.

105. (New) The method of Claim 82, wherein the p-surface comprises polygons approximating an ellipsoid.

106. (New) The method of Claim 82, wherein the p-surface comprises polygons approximating a dodecahedron.

107. (New) The method of Claim 82, wherein the p-surface comprises polygons approximating a cylinder.

108. (New) The method of Claim 81, wherein the displaying comprises displaying a user-selected portion of the texture-mapped p-surface.

109. (New) The method of Claim 81, further comprising a user selecting the portion of the texture-mapped p-surface to be displayed during the displaying.

110. (New) The method of Claim 81, further comprising a user selecting the portion of the texture-mapped p-surface to be displayed during the displaying via an interactive user interface.

111. (New) The method of Claim 110, wherein the user selecting the portion of the texture-mapped p-surface to be displayed is performed using a zoom function via the interactive user interface.

112. (New) The method of Claim 82, wherein the full surround image data comprises an at least substantially spherical image data set.

113. (New) The method of Claim 82, wherein the full surround image data comprises an at least substantially cylindrical image data set.

114. (New) The method of Claim 82, wherein the full surround image data comprises an at least substantially hemispherical image data set.

115. (New) The method of Claim 81, wherein the full surround image data comprises an at least approximately spherical image data set.

116. (New) The method of Claim 81, wherein the full surround image data comprises an at least approximately cylindrical image data set.

117. (New) The method of Claim 81, wherein the full surround image data comprises an at least approximately hemispherical image data set.

118. (New) The method of Claim 81, wherein the displaying is performed using linear perspective.

119. (New) The method of Claim 82, wherein the displaying is performed using circular perspective.

120. (New) The method of Claim 81, wherein the texture-mapping is performed using stereographic projection.

121. (New) The method of Claim 82, wherein the method is performed using a 3D computer graphics system.

122. (New) The method of Claim 82, wherein the method is performed using a computer graphics system employing a conventional graphics library such as OpenGL.

123. (New) The method of Claim 81, wherein the displaying is performed using any user-selected one of linear perspective and circular perspective, at the user's option.

124. (New) The method of Claim 81, wherein the displaying is performed using any user-selected one of linear perspective, elliptical perspective, and circular perspective, at the user's option.

125. (New) The method of Claim 81, further comprising a user selectively moving the view point toward and away from a surface area of the p-surface to thereby alter a perspective used for the displaying.

126. (New) The method of Claim 82, further comprising a user selectively moving the view point toward and away from a surface area of the p-surface to thereby alter a perspective used for the displaying.

127. (New) The method of Claim 118, wherein the user is provided an option of selecting any one of linear perspective and circular perspective for the displaying.

128. (New) The method of Claim 118, wherein the user is provided an option of selecting any one of linear perspective, elliptical perspective, and circular perspective for the displaying.

129. (New) The method of Claim 82, wherein the method is performed using a standard 3D computer graphics system.

130. (New) The method of Claim 82, wherein the displaying is performed using primitives of a 3D computer graphics system.

131. (New) The method of Claim 81, wherein the method is performed using a 3D computer graphics system native to a personal computer.

132. (New) The method of Claim 81, further comprising a user using an interactive viewing system to pan around imagery represented by the full-surround image data to give the user the effect of looking around at the imagery as if immersed within the p-surface, to thereby provide a virtual reality representation of the visible world.

133. (New) The method of Claim 82, further comprising a user using an interactive viewing system to pan around imagery represented by the full-surround image data to give the user the effect of looking around at the imagery as if immersed within the p-surface, to thereby provide a virtual reality representation of the visible world.

134. (New) The method of Claim 81, further comprising a user using an input device to move the view point in and out along an axis relative to the p-surface to thereby effectively alter the user's view of the displayed portion of the texture-mapped p-surface.

135. (New) The method of Claim 82, further comprising a user using an input device to move the view point in and out along an axis relative to the p-surface to thereby effectively alter the user's view of the displayed portion of the texture-mapped p-surface.

136. (New) The method of Claim 81, further comprising a user using an input device to control rotation of the p-surface to thereby effectively allow the user to look around imagery represented by the full-surround image data of the texture-mapped p-surface.

137. (New) The method of Claim 82, further comprising a user using an input device to control rotation of the p-surface to thereby effectively allow the user to look around imagery represented by the full-surround image data of the texture-mapped p-surface.

138. (New) The method of Claim 81, further comprising:

a user using an input device to move the view point in and out along an axis relative to the p-surface to thereby effectively alter the user's view of the displayed portion of the texture-mapped p-surface; and

the user using the input device to control rotation of the p-surface to thereby effectively allow the user to look around imagery represented by the full-surround image data of the texture-mapped p-surface.

139. (New) The method of Claim 82, further comprising:

a user using an input device to move the view point in and out along an axis relative to the p-surface to thereby effectively alter the user's view of the displayed portion of the texture-mapped p-surface; and

the user using the input device to control rotation of the p-surface to thereby effectively allow the user to look around imagery represented by the full-surround image data of the texture-mapped p-surface.

140. (New) The method of Claim 81, further comprising providing a user an option to zoom in on imagery represented by the full-surround image data of the texture-mapped p-surface.

141. (New) The method of Claim 82, further comprising providing a user an option to zoom in on imagery represented by the full-surround image data of the texture-mapped p-surface.

142. (New) The method of Claim 81, further comprising a user using an input device to control the direction of view to thereby effectively allow the user to look around imagery represented by the full-surround image data of the texture-mapped p-surface.

143. (New) The method of Claim 82, further comprising a user using an input device to control the direction of view to thereby effectively allow the user to look around imagery represented by the full-surround image data of the texture-mapped p-surface.

144. (New) The method of Claim 81, further comprising using the method to generate a plurality of p-surfaces using different respective sets of full-surround image data.

145. (New) The method of Claim 144, further comprising linking the plurality of p-surfaces in such a manner as to enable a user to hop amongst the plurality of p-surfaces to simulate a tour thereof.

146. (New) The method of Claim 81, wherein the method is implemented in a multimedia entertainment system.

147. (New) The method of Claim 82, further comprising using the method to generate a plurality of p-surfaces using different respective sets of full-surround image data.

148. (New) The method of Claim 136, further comprising linking the plurality of p-surfaces in such a manner as to enable a user to hop amongst the plurality of p-surfaces to simulate a tour thereof.

149. (New) The method of Claim 82, wherein the method is implemented in a multimedia entertainment system.

150. (New) The method of Claim 81, further comprising enabling multiple users using independent viewing systems to independently cause to be displayed and to view any selected portion of the texture-mapped p-surface.

151. (New) The method of Claim 82, further comprising enabling multiple users using independent viewing systems to independently cause to be displayed and to view any selected portion of the texture-mapped p-surface.

152. (New) The method of Claim 60, wherein the point of projection comprises the view point.

153. (New) The method of Claim 60, wherein the point of projection is different from the view point.

154. (New) The method of Claim 60, wherein the selecting a direction of view is performed by a user.

155. (New) The method of Claim 60, wherein the selecting a direction of view is performed by a user using an interactive user interface.

156. (New) The method of Claim 60, wherein the view point is within the p-surface.

157. (New) The method of Claim 66, wherein the point of projection comprises the view point.

158. (New) The method of Claim 66, wherein the point of projection is different from the view point.

159. (New) The method of Claim 66, wherein the selecting a direction of view is performed by a user.

160. (New) The method of Claim 66, wherein the selecting a direction of view is performed by a user using an interactive user interface.

161. (New) The method of Claim 66, wherein the view point is within the p-surface.